7. NEAR-TERM RECOMMENDATIONS

A. DEPLOYMENT

The portal is planned for a two-phased deployment in order to mitigate technical and programmatic risk and ensure the best possible experience for the users.

The primary aspects that should be **centralized** are COTS integration, licensing, and training. Content management, user training, and focused roll-outs would be **distributed**. Hosting would be on a small number of distributed servers. Integration of the search capabilities is achievable, but a technical challenge.

B. STRATEGIC PLANNING

There are two primary mechanisms for deploying the portal across the Agency: Center by Center and/or community by community. For example, JPL will be implementing a Center-wide approach and all (or most) users will experience a content-rich, populated portal when they begin (think of it as the broad, shallow approach). Building upon this model, communities across Centers or at other Centers could build entrances to project- or community-specific information (think of it as the deep, but focused approach). Eventually, many areas and interests would have a depth of knowledge available.

Once the portal is initially deployed, there is no "webmaster", although there will probably need to be system administrators at the hosting Center and perhaps a Center programmer and administrator to track the logs and deal with new groups. This should be done along the lines of a distributed model, where there is an administrator for each Center. We will identify some basic channels (news, research, and project information) that are needed at the beginning and then establish a group of approved Agency publishers for each channel. The user then has the option of subscribing to news from each of these channels.

Each of the Centers' Public Affairs areas should be a publisher and whatever story appears on their home page should also appear as a headline in the "News from the Centers" channel. Both projects and communities would be useful as they bring together different sets of people that are possibly working on similar problems without an awareness of each other, although we want to be mindful of appointing some kind of moderator or sponsor for each major channel.

Table 2. Sample Measurements for Success

TANGIBLE BENEFITS	METRIC
Higher customer satisfaction	Satisfied user index
Elimination of rework	Number of hours saved
Enhanced knowledge capture	Number of information objects captured in repository
INTANGIBLE BENEFITS	**INDICATOR**
Improved knowledge sharing	Knowledge organization index
Better understanding of legacy systems	Captured business rules and metadata
Better understanding of business processes	Captured business rules and metadata
Improved business intelligence	Organizational IQ
Improved reputation	Increase in web traffic, user feedback

C. USER COMMUNITIES

The user bases include project and mission teams, communities of practice (any group interested in the same topic), and job groupings (people who do similar work). It would useful to look at the workforce profile for NASA to target specific kinds of research the Agency is presently involved in and that the biggest numbers of employees are engaged in.

Marketing can be done using a number of vehicles, including the portal itself. We have already presented to and started to prepare a network of internal communicators and webmasters across the Centers. The first planned communities and their sponsoring organizations include:

- Standards (Code AE—Weinstein)
- APPL (Code FT—Hoffman)
- e-Learning (Code F—McElwee)

D. PHASE 1

The primary thrust of Phase 1 of the portal will be to develop and deploy an Agency-wide intranet and public portal prototype focusing on the improved access to agency information resources. This will build upon the successful portal pilot developed at JPL using Sun's iPlanet product and Code FE's SpaceLink search capability run by MSFC on Ultraseek software (see Figures 13-15).

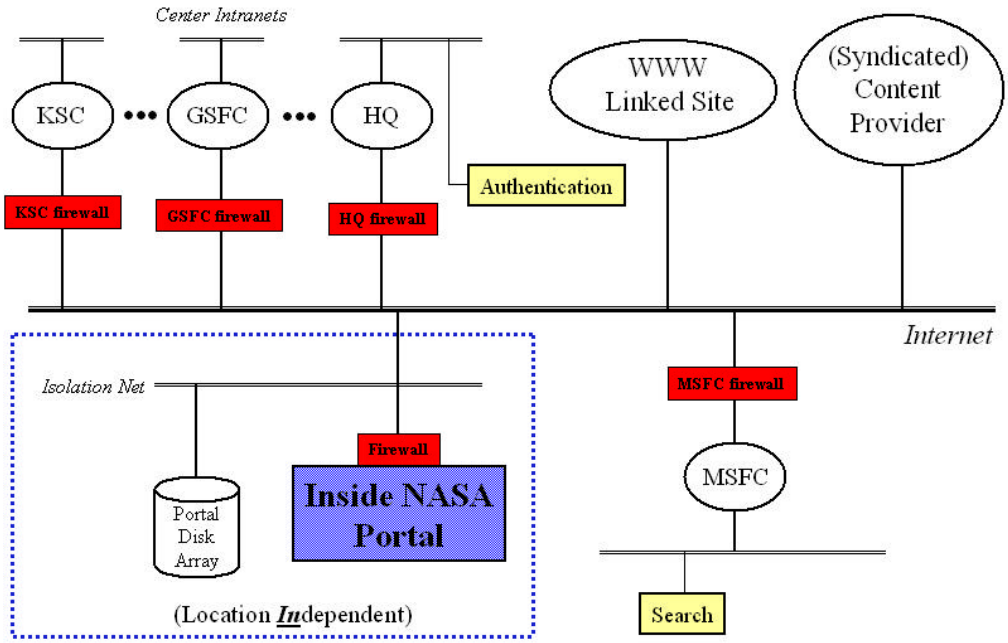

Figure 13. Phase 1: InsideNASA Hardware Architecture

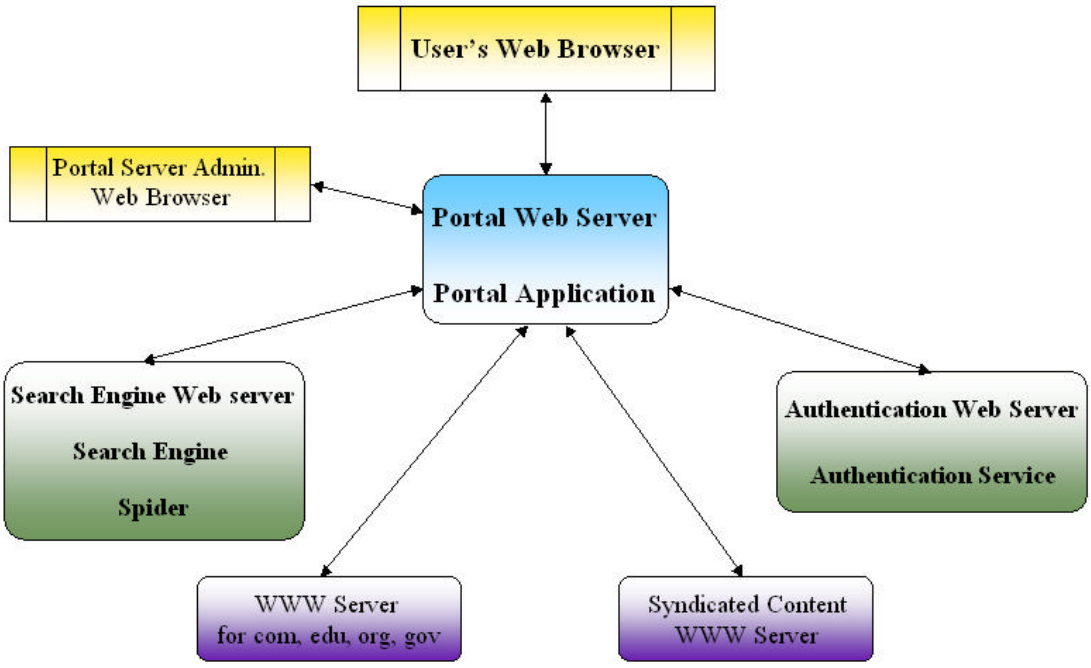

Figure 14. Phase 1: InsideNASA Software Architecture

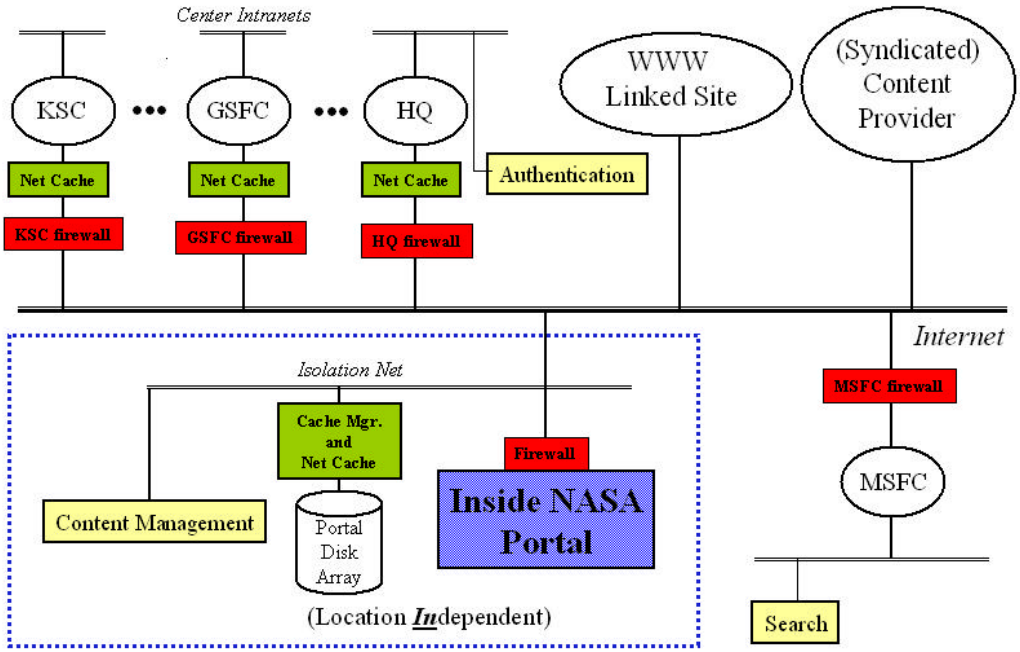

Figure 15. Phase 2: InsideNASA architecture

The Appendix shows a requirements matrix for both the InsideNASA and MyNASA portals, as well as initial prioritization of those requirements for the phased delivery. Requirements will continue to be gathered throughout the initial start up of the project. At the time of the Requirements Review, the requirements for each phase will be baselined.

Authentication will be enabled by a best practice capability already deployed to thousands of NASA employees within several centers and mission areas. The capability provides two-factor authentication using a hardware token and is based on the RSA SecurID product. The authentication service will be provided by the Secure Nomadic Access (SNA) project.

To comply with Agency initiatives in eliminating clear text re-usable passwords, and to provide easy to use, 2810 compliant strong authentication for users accessing the portals, the project intends on leveraging the work already completed under a Headquarters initiative and provide customers with strong authentication to a portal. Strongly authentication means that the user needs two of the following three things (1) Something they have, (2) Something they know, (3) something they are. For this project NASA users that require anything other than public access will be issued a hardware token that will automatically display their passcode every

minute. The user when logging in will be challenged for their name and passcode. To enter their passcode they simply append a pre-assigned PIN to whatever passcode is being displayed to gain entry to the portal. This approach will not only provide excellent security and leverage the existing ACE infrastructure across NASA but positions us to make use of *roles based* access to information instead of simple *rules based*. Because of its modular and flexible architecture, this approach will support numerous governance models ranging from Center specific to Agency wide.

We suggest that existing directories be examined for their use in a first-effort portal prototype. The logical place to look for directories that are already serving the public well is the NASA home page and its underlying taxonomies. Study of the NASA homepage yields taxonomies reflecting some of the following topical groupings: mission names, NASA educational themes and work by Center. In addition, the Top Search terms page seems to reflect much searching by planet name.

Taking two or three top-level taxonomies from these sources would represent a first cut look at NASA web content. Although it is severely constrained, it would be a doable goal for a near term prototype effort until more in depth work could be done. The NASA Webmasters have already identified the top Agency sites. It wouldn't be difficult to approach site designers and get their support on a simplified metadata tagging schema as a first step at Agency-wide controlled vocabularies.

A relatively brief set of tags developed from the Dublin Core metadata set can be adopted by Webmasters for universal implementation. This retrofitting effort would be a great improvement over the current state of NASA web space.

Webmasters want their sites to be found. Shrewd ones do all they can to increase their visibility at the top commercial search engines. In the same way we can encourage consistency in metadata implementation by creating a web site registration process for the NASA Search site or expanding the existing one operated by MSFC for Code FE's SpaceLink. Webmasters with new sites that want to be accepted into the NASA Search catalogue would be asked to complete an online registration form that includes metadata fields designed to slot sites into the appropriate directory category.

Due to the fact that implementing a production content management system is neither quick nor cheap, coupled with the fact that there is an effort to roll out a first phase NASA portal

in six to twelve months, it is in the best interest of the Agency to invest in some more time in research regarding web-based content management. This research needs to be combined with the final Web services model developed by the Web Management Services (SRR 67) team to develop requirements for a content management system. Further research should continue both in vendor markets and industry trends, as well as, in lessons learned regarding business process associated with the initial phase of the NASA Portal project.

The detailed description of the implementation steps is shown in the schedule noted below.

In order to produce and maintain a NASA portal correctly it is imperative to have both the right management organization, as well as the right technology to manage the vast amounts of content that exists within the Agency.

Table 3. Proposed Implementation Steps for the Phase 1 Portal

NASA PORTAL PHASE 1	
REVIEWS	REQUIREMENTS REVIEW
	SECURITY REVIEW
	CRITICAL DESIGN REVIEW
	OPERATIONAL READINESS REVIEW
	INSIDE NASA PILOT ORR
	MYNASA PILOT ORR
	MISSION PI PILOT ORR
	LESSONS LEARNED REVIEW
COMMUNICATIONS AND ROLLOUT	AGENCY, CENTER, WEBMASTER, AND PUBLISHER COMMUNICATIONS
	TRAINING FOR PORTAL DEVELOPERS, PUBLISHERS, AND USERS
	ONGOING CUSTOMER FEEDBACK
SYSTEM ENGINEERING	BASELINE FUNCTIONAL REQUIREMENTS
	FUNCTIONAL REQUIREMENTS DOCUMENT
	INTERFACE CONTROL DOCUMENTS
	· INTEGRATE NITI RESULTS
	· ESTABLISH INTERFACES TO EXISTING SYSTEMS (PORTAL, SEARCH, SECURE NOMADIC ACCESS, AND COLLABORATIVE TOOLS)

PORTAL MANAGEMENT	PROCURE HARDWARE AND SOFTWARE
	ESTABLISH SERVICE LEVEL AGREEMENT FOR HOSTING AND HELP DESK
	PHYSICAL SITING
	PROGRAMMING AND SECURITY
	MAKE DEVELOPMENT ENVIRONMENT AVAILABLE TO DISTRIBUTED DEVELOPERS
	SYSTEM TESTING, MAINTENANCE, AND REPAIR
INFORMATION ARCHITECTURE	CREATE MAP OF NASA INFORMATION SPACE AND INFORMATION FLOW DIAGRAM
	CREATE TAXONOMY AND IDENTIFY AND INTEGRATE EXISTING TAXONOMIES
	INTEGRATE NASA THESAURUS
	ESTABLISH AND TEST TAXONOMY
ADOPT METADATA STANDARDS	IDENTIFY STANDARDS AND SELECT
	IMPLEMENT IN TWO KEY SYSTEMS
	IDENTIFY OR CREATE METADATA REGISTRY
CONTENT MANAGEMENT	DEVELOP PORTAL MOCK-UPS
	IDENTIFY INTERNAL PUBLISHERS, KEY CONTENT AND SYSTEMS, AND SYNDICATED CONTENT
	CREATE PUBLISHERS' AGREEMENT
	ESTABLISH COMMUNITY CHANNELS (STANDARDS, APPL, E-LEARNING, OTHERS)
INVESTIGATE MANAGED HOSTING SERVICES FOR PHASE 2	IDENTIFY POSSIBLE CANDIDATES, SITE VISITS
	DEFINE MUTUAL REQUIREMENTS, AND MONITOR METRICS AND MANAGE CONTENT
	ESTABLISH CONTRACT IF APPLICABLE
NASA PORTAL PHASE 2	SCALE EXISTING HARDWARE AND SOFTWARE
	MOVE TO MANAGED HOSTING SERVICE (OPTIONAL) (PARALLEL OPERATIONS)
	ENHANCE SEARCH CAPABILITY
	INTEGRATE TO SECURE NOMADIC ACCESS SERVICE
	ESTABLISH CONTENT MANAGEMENT PROCESSES
	SELECT CONTENT MANAGEMENT TOOLS
	MONITOR METRICS AND MANAGE CONTENT